Space Weather Forecast

Issued on Wednesday, 12 October 2022 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class X-ray flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with two Moderate class flares emanating from the vicinity of the large region in the northwest quadrant, both appearing to be accompanied by CMEs (coronal mass ejections). Analysis of these will be undertaken once sufficient imagery has become available to determine if they may be Earth-directed. In addition to the large region there are three further sunspot regions in the western hemisphere, all of which appear to be relatively inactive bipolar regions. In addition to the two possible eruptions mentioned above, an eruption was observed close to the south-centre disc early on 11 October, but preliminary analysis does not support an Earth-directed component.

Solar Wind / Geomagnetic Activity: The solar wind declined from elevated to background levels as the earth leaves the influence of a fast solar wind. The total magnetic field was weak, with the north-south component only varying weakly. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is forecast to be Low to Moderate with only a very slight chance of High activity, mainly due to the continued influence of the large region in the northwest on the flare probabilities.

Solar Wind / Geomagnetic Activity: A CME may glance the Earth early on 12 October, with a further glancing blow possible on 14 October, but both these are low confidence. The recent fast solar wind now waned to background, with an elevated fast wind then possible during 14 October, giving estimated speeds of 500km/s. Geomagnetic activity is forecast to be mainly Quiet to Unsettled on 12 October, with a slight chance of Active to G1/Minor Storms due to the possible CME. Mainly Quiet through 13 October, then further possible G1/Minor Storms on 14 October due to either a CME glancing blow or fast wind connection, or even a possible combination of both.

Energetic Particles / Solar Radiation: Solar radiation storms should be at background, but with a daily slight chance of rising in response to any significant flares, primarily from the largest sunspot groups.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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